

Calculating the Fertilizer Value of Manure

Results:

Field Size (Ac):	100
Cost Savings (\$/Yr):	\$506
Cost Savings (Ac/Yr):	\$5.06
Lost Nutrient Value (\$/Yr):	\$0
Lost Value (\$/Ac/Yr):	\$0.00
Break-Even Cost on Manure Management Improvement	\$3,395
Maximum Acres Served:	96
Cost Savings (\$/Yr):	\$556
Cost Savings (\$/Ac/Yr):	\$5.77

Farm Operation:

Operator:	Rocking Raindrop Ranch
Location:	McMinnville, OR
Animal Type:	Beef Cows
Animal Units:	50
Days Storage:	200
Manure Storage Method:	Dry Stack
Manure Application Method:	Broadcast
Crop Manure Applied To:	Wheat
Target Yield/Unit:	80 Bu
Previous Crop:	Grass Seed
Manure Management Improvement:	Build Dry Stack Facility
Life (yrs):	10
Discount Rate:	8.00%

	<u>N</u>	<u>P2O5</u>	<u>K2O</u>
Manure Production Rate (Lbs/AU/Day):	0.36	0.11	0.13
Total Production (Lbs/Yr):	6,570	2,008	2,373
Rate Retained in Storage (%):	60%	75%	65%
Retained in Storage (Lbs/Yr):	3,942	1,506	1,542
Rate Retained in Application (%):	80%	100%	100%
Retained in Application (Lbs/Yr):	3,154	1,506	1,542
N After Denitrification (%):	87%		
Nutrient Availability (%):	95%	100%	100%
Nutrient Availability (Lbs/Yr):	2,606	1,506	1,542
Crop Nutrient Needs (Lbs/Ac):	80	18	16
Acres Served by Manure:	32.6	83.6	96.4
Largest Acreage Served:	0.0	0.0	96.4
Acres Needing Supplement:	63.8	12.7	0.0
Additional Nutrient Needed (Lbs/Yr):	5,104	229	0
Approximate Fertilize Mix:	99	77	0
Max Acres Served			
Field Size:	96.4		
Value of Commercial Fertilizer (\$/Lb):	\$0.27	\$0.28	\$0.49
Original Commercial Fertilizer Cost (\$/Yr):	\$2,082	\$486	\$756
Additional Commercial Fertilizer Purchased (\$/Yr):	\$1,378	\$64	\$0
Fertilizer Cost Savings (\$/Yr):	\$704	\$422	\$756
Fertilizer Cost Savings (\$/Ac/Yr):	\$7.30	\$4.37	\$7.84
Actual Acres Served			
Field Size:	100.0		
Fertilizer Requirements (Lbs/Yr):	8,000	1,800	1,600
Manure Supplied Fertilizer (Lbs/Yr):	2,606	1,506	1,542
Additional Nutrient Needed (Lbs/Yr):	5,394	294	58
Original Cost of Fertilizer (\$/Yr):	\$2,160	\$504	\$784
Fertilizer Purchased (\$/Yr):	\$1,456	\$82	\$28
Fertilizer Cost Savings (\$/Yr):	\$704	\$422	\$756
Lost Nutrient Value (\$/Yr):	\$0	\$0	\$0
Lost Nutrient Value (\$/Ac/Yr):	\$0.00	\$0.00	\$0.00
Commercial Fertilizer Application Cost (\$/Ac/Yr):	\$6.25		
Manure Application Cost (\$/Ac/Yr):	\$20.00		
Cost Difference (\$/Field Size/Yr):	(\$1,375)		
Cost Difference (\$/Ac/Yr):	(\$13.75)		

Nutrient Storage Losses

Storage System								
	Dairy			Beef			Swine	
	N	P	K	N	P	K	N	P
Open Lot (Humid Region)	80%	90%	90%	65%	75%	65%	65%	75%
Open Lot (Arid Region)	65%	90%	90%	50%	75%	65%	50%	75%
Solids Storage Facility (Roofed)	75%	90%	90%	60%	75%	65%	NA	NA
Solids Storage Facility (Unroofed)	65%	80%	80%	50%	65%	55%	NA	NA
Tank (Covered)	80%	90%	90%	80%	90%	90%	80%	90%
Tank (Uncovered)	70%	85%	85%	70%	85%	85%	75%	85%
Tank (Covered) Storing Digester Effluent	80%	90%	90%	80%	90%	90%	80%	90%
Tank (Uncovered) Storing Digester Effluent	70%	85%	85%	70%	85%	85%	75%	85%
Pits with Slatted Floor	80%	95%	95%	80%	90%	90%	80%	95%
Storage Pond (<50%) Dilution	49%	90%	90%	65%	80%	85%	60%	60%
Storage Pond (>50%) Dilution	39%	65%	80%	55%	65%	80%	39%	45%
Storage Pond Storing Digester Effluent	65%	95%	95%	65%	95%	95%	65%	95%
Anaerobic Lagoon	30%	45%	60%	30%	45%	60%	25%	45%
NONE	100%	100%	100%	100%	100%	100%	100%	100%

Nutrient Application Losses

Application Method	Percent of original nutrient content of		
	N	P	K
Injection	95%	100%	100%
Sprinkling	75%	100%	100%
Broadcast (Incorporated 1 day after application)	90%	100%	100%
Broadcast (Incorporated 4 days after application)	80%	100%	100%
Broadcast (Incorporated 7 or more days after application)	70%	100%	100%
Grazing	85%	100%	100%

Mixed			
K	N	P	K
60%	65%	75%	65%
60%	50%	75%	65%
90%	60%	75%	65%
80%	50%	65%	55%
NA	80%	90%	90%
NA	70%	85%	85%
NA	80%	90%	90%
NA	70%	85%	85%
95%	80%	90%	90%
NA	65%	80%	85%
NA	55%	65%	80%
NA	65%	95%	95%
NA	30%	45%	60%
100%	100%	100%	100%